<table>
<tr><td rowspan="3">C U R A T O R I A L
N E W S L E T T E R</td><td>DATE: JANUARY 17, 1980</td><td>NO: 26</td></tr>
<tr><td colspan="2">Patrick Butler Jr.</td></tr>
<tr><td colspan="2">PATRICK BUTLER, JR., LUNAR SAMPLE CURATOR
CURATORIAL BRANCH, SN , NASA-JSC
HOUSTON, TEXAS 77058 (713)483-3274</td></tr>
</table>

CONTENTS

PAGE

ATTACHMENTS

A. LAPST Membership List with Addresses
B. Dissection Synopsis for Core 12027

LAPST AND REQUESTS FOR SAMPLES

The Lunar and Planetary Sample Team (LAPST) met November 17-20, 1979 and recommended allocation of 124 splits from 31 different samples to go to 16 Principal Investigators (PI's). Their next meeting will be February 14-17, 1980 to be followed by another meeting in mid-May. Please submit requests for samples as far in advance of these meetings as you can to allow time for assembly of background information. Also, remember to include your schedule for studying the samples so appropriate priorities can be set for their preparation.

INTER-LABORATORY STANDARDS

In response to questionnaires concerning analytical standards distributed to most of the extraterrestrial materials program PI's involved in analytical studies, LAPST received a rather large response which highlighted several areas of concern:

1. That there may be a tendency to slip back into pre-Apollo 11 "bad days" with respect to inter-laboratory calibration using appropriate standards.

2. That for bulk chemical major, minor and some trace element work, there are in general, adequate existing standards available, but that there are some gaps - e.g., halogens, other volatiles, such as Cd, Zn, etc. It was also felt that for some meteorite and lunar work there is a need for standard rocks of more appropriate compositions, e.g., anorthosite, H-chondrite, L-chondrite, etc.

3. A very widespread concern among electron microprobe users that there are few or no inter-laboratory standards and that there is a need for more intercalibration. A similar situation exists for ion microprobe analysts, although there is currently more activity among these workers to obtain or prepare standards to meet analytical needs. These may also help to improve the situation for electron microprobe analysts.

4. A need to adopt a common Nd isotopic standard and normalization.

5. Rare gas standards presently vary considerably, from unprocessed atmospheric gas to reconstructed and isotopically altered mixtures of gases. There is a need to adopt a noble gas standard; however, calibration, storage and distribution become complicated when altered gases are prepared. It would be useful if a simple atmosphere standard could be prepared and distributed for laboratory intercalibration to supplement and cross-check standards prepared by individual laboratories.

6. Calvin Alexander has prepared a standard that has proven useful for ^{40}Ar-^{39}Ar work. He is willing to distribute this material for general use. The material is limited, however, and additional suitable ^{40}Ar-^{39}Ar standards may be required in the future.

Because careful use of inter-laboratory standards is critical for maintaining the high quality of extraterrestrial materials investigations, LAPST intends to actively monitor the standards situation and to encourage initiatives that would meet perceived needs. One respondent suggested that LAPST requires results on standards when difficult experiments are proposed for rare materials. Some preliminary steps being taken by LAPST to improve the current situation will be described in future newsletters; in the meantime, further suggestions and/or comments would be appreciated (send to LAPST, c/o Curator's Office).

CORES

Following is an updated version of the core status and schedule that was in Newsletter No. 19, April 1978. The philosophy of the schedule continues to follow that established in a meeting in 1978 at the 9th Lunar Science Conference. In particular, there should be a concentration on one mission at a time in order to be able to report on completed and integrated results for single landing sites. All of the cores from Apollos 11, 12, and 14 have been dissected. After spectral reflectance images have been made along the dissection surfaces, the stratigraphic remainders from 12017, 14220, and 15008 will be impregnated in April for making thin sections.

After the Apollo 15 cores are finished late this year, the schedule shows a concentrated effort on Apollo 16 cores to be followed by Apollo 17 in 1982. There is still time, however, for full discussion of doing the Apollo 17 cores before the Apollo 16 cores. Proponents of such a change in schedule, or any other change for that matter, should write the Curator. No changes will be made, however, without notice of what is being considered well in advance so that all views can be heard.

SCHEDULE FOR CORE SAMPLE DISSECTIONS AND ALLOCATIONS

NUMBER	TYPE*	SAMPLE WEIGHT(g)	LENGTH (cm)	SCHEDULED START	SCHEDULED COMPLETION	COMMENTS
10004	SDT	65	14.0	Done		Disturbed, no impregnated sections made
10005	SDT	51	11.0	Done		"
12025	DDT-U		9.5	Done		"
12028	DDT-L		31.6	Done		"
12026	SDT	107	19.3	Done		"
12027	SDT	95	17.4	Done		

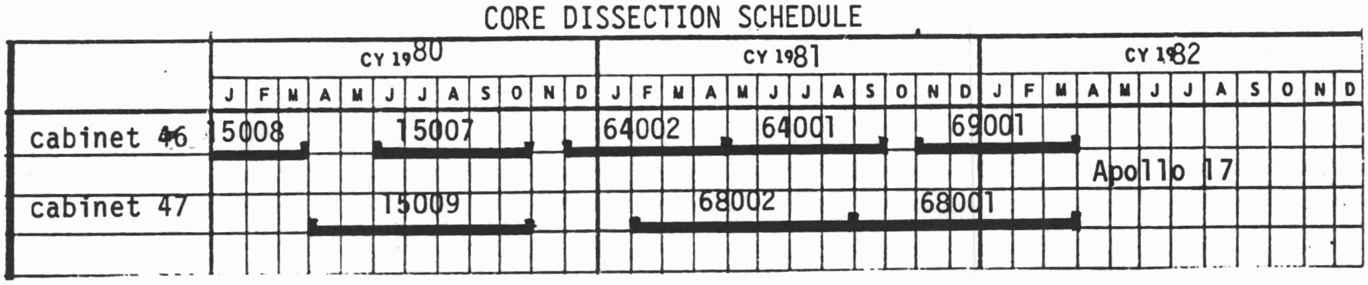
NUMBER	TYPE*	SAMPLE WEIGHT(g)	LENGTH (cm)	SCHEDULED START	SCHEDULED COMPLETION	COMMENTS
14212	DDT-L		32.5	Done		SR (Spectral reflectance)**
14211	DDT-U		7.5	Done		SR
14220	SDT	81	16.5	Done		
14230	SDT	71	12.5	Done		
15001-14006	Drill	1344	242	Done		Discontinuous thin section coverage except 15003 which has continuous coverage.
15007	DDT-L	228	35.6	6/80	10/80	
15008	DDT-U	510	30.4	12/79	3/80	
15009	SDT	622	38.5	4/80	10/80	
15010	DDT-L	741	28.9	Done		
15011	DDTU	661	32	Done		
60001-60007	Drill	1009	189.7	Done		
60009	DDT-L	760	65.4	Done		
60010	DDT-U	635				
60013	DDT-L	757	63.1	Indefinite		In Remote Storage Vault
60014	DDT-U	570		Indefinite		In Remote Storage Vault
64001	DDT-L	752	65.6	5/81	9/81	
64002	DDT-U	584		12/80	4/81	
68001	DDT-L	841	62.3	9/81	3/82	
68002	DDT-U	584		2/81	8/81	
69001	SDT	558	∿25	11/81	3/82	In sealed container
70001 70009	Drill	1768	292.1	Done		
70012	SDT	485	18.4	/82		
73001	DDT-L	809	56	Indefinite		In sealed container***
73002	DDT-U	430		Indefinite		In Remote Storage Vault
74001	DDT-L	1072	68.2	Done		
74002	DDT-U	910		Done		SR
76001	SDT	712	∿34	Done		SR
79001	DDT-L	743	54.5	/82		
79002	DDT-U	409		/82		

*SDT single drive tube. DDT double drive tube. -U upper, -L lower.

**SR-Spectral reflectance images made of dissected surface prior to impregnating stratigraphic remainder. See Butler et al., 1979, Lunar & Planetary Science X, 175-177.

***In Newsletter #19, section 73001 was incorrectly shown to be in Remote Storage, where it was intended to go but did not because a satisfactory vacuum could not be kept on its container. Section 73002 is in Remote Storage and is not scheduled for processing as shown in Newsletter #19.

CORE DISSECTION SCHEDULE



February 1980

LAPST MEMBERSHIP

Dr. James J. Papike, Vice-Chairman
State University of New York
Dept. of Earth & Space Sciences
Stony Brook, NY 11794
(516)246-4047 - FTS: 87-516-246-4047
(DIRECT)

Dr. William V. Boynton
University of Arizona
Lunar and Planetary Laboratory
Department of Lunar Science
Tucson, AZ 85721
(602)626-3484 - FTS OPR: 87-762-6011

Dr. Friedrich Hörz
NASA-Johnson Space Center
SN6/Geology Branch
Planetary & Earth Sciences
Houston, TX 77058
(713)483-5171 - FTS: 87-525-5171

Dr. Charles Hohenberg
Washington University
Laboratory for Space Physics
St. Louis, MO
(314)889-6266 - FTS OPR: 87-279-4110

Dr. I. Douglas Macdougall
Scripps Institution of Oceanography
Geological Research Division, A-020
La Jolla, CA 92093
(714)895-5000 - FTS: 87-452-3294

Dr. David S. McKay
NASA-Johnson Space Center
SN6/Geology Branch
Planetary and Earth Sciences
Houston, TX 77058
(713)483-5171 - FTS: 87-525-5171

Dr. Carleton B. Moore
Center for Meteorite Studies
Arizona State University
Tempe, AZ 85281
(602)965-3576 - FTS: 87-766-3576

Dr. Lawrence A. Taylor
University of Tennessee
Department of Geology
Knoxville, TN 37916
(615)974-2366 - FTS: 87-855-2366

Dr. David Walker
Harvard University, Dept. of Geology
Hoffman Laboratory
Cambridge, MA 02138
(617)495-2291 - FTS: 87-830-2083

CORE SYNOPSIS

Sample No. 12027, a single drive tube, 2 cm in diameter

Field relationships: This core was taken in the bottom of a trench that intercepted the rim crest of Sharp Crater, which is 13 meters in diameter. (Using the relation, rim thickness =.04 radius, from McGetchin et al., 1973, Earth & Planetary Sci. Letters 20, p.226, one can expect 26 cm of rim crest deposits at the sampling site.) The trench was approximately 20 cm deep and the core extende the section from the depth of 20 cm to approximately 53 cm. Soil from the trench was placed in the Lunar Environment Sample Container (LESC) and subsequently assigned No. 12023.

Sample History - Possible contamination or disturbance: Recovery was approximately 55%, in that the core penetrated approximately 33 cm below the trench bottom, but only 17 cm of soil was contained in the core barrel. According to Carrier et al., 1971, Proc.2LSC, p. 1959, it is more likely that a partial sample was taken from every layer encountered, rather than a failure to sample some layers or loss of sample during recovery.

Length: 17.0 cm Mass: 88.4 gm Bulk Density: 1.66 gm/cm^3

Numbering of samples: Dissection took place in one pass, and dissection splits are numbered consecutively downward from the top of the core. Approximately one-half of the diameter of the soil cylinder was left in the split liner for impregnation with epoxy in order to provide a permanent stratigraphic record of the core, and to provide adequate material for thin sections. In 2 cm cores, thin sections are assigned the -,1000 rank of numbers, so thin sections in 12027 will start from 12027,1000.

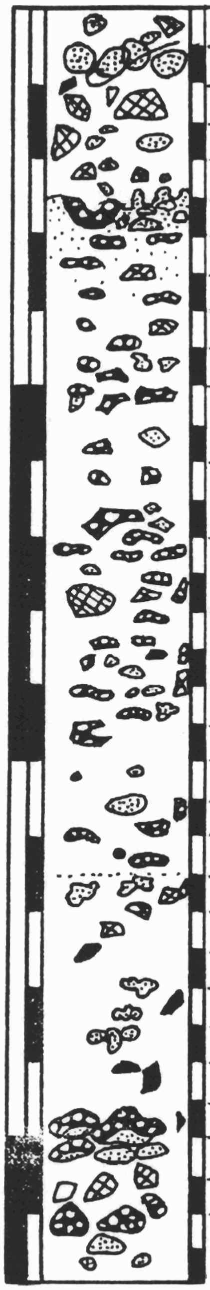
Summary of stratigraphic units identified during dissection:

Unit	Depth/Samples	Light/dark* color	Relative grain size	Major petrographic components
4	0.0 - 2.5 cm 12027 ,5 - ,14	light	coarse 10-20% >1mm	Unit 4 is crumbly. The upper 1 cm, at the bottom of a 20 cm deep trench contains soil clods and a piece of wire from the astronauts' tools and was probably disturbed by trenching. The lower 1.5 cm is very rich in basalt fragments and is relatively cohesive.
3	2.5 - 11.5 cm 12027,15 - ,50	dark	fine 2-5% >1mm	This unit is very cohesive. Regolith-derived particles - agglutinates, fragmented glass and soil breccia are commonest in the >1mm fraction of this unit. Basalt is only moderately common. Glassy material appears to be very abundant in the fine size fraction.
2	11.5 - 13.5 cm 12027,51 - ,58	moderately dark	fine 2% >1mm	This unit is moderately friable. Dark matrix breccia is unusually abundant in the coarse fraction, at the expense of other particle types.
1	13.5 - 17.0 cm 12027,59 - ,72	moderately dark	coarse 10-15% >1mm	This unit is very crumbly, and has a concentration of large particles of in situ vesicular glass and underlying soil breccia.

*Color differences are subtle, tne entire range being 3/1 to 4/1 on the Munsell color scale, in which white is 10/1 and black is 1/1.

Attachment B

DRIVE TUBE 12027, SAMPLE SPLIT DATA



Columnar Section Depth (cm)	FINE (< 1mm) FRACTION Sample No.	Sample Wt.	COARSE (> 1mm) FRACTION Sample No.	Sample Wt.	SPECIAL SAMPLES Sample No.	Sample Wt.	Sample Type
0.0	,5	0.624	,6	0.026			
0.5	,7	0.923	,8	0.151			
1.0	,9	0.887	,10	0.595			
1.5	,11	0.911	,12	0.068			
2.0	,13	1.015	,14	0.028			
2.5	,15	1.009	,16	0.105	,2	0.651	rind, 0 - 6 cm
3.0	,17	1.157	,18	0.027			
3.5	,19	1.090	,20	0.023			
4.0	,21	1.111	,22	0.033			
4.5	,23	1.226	,24	0.015			
5.0	,25	0.921	,26	0.032			
5.5	,27	1.185	,28	0.014			
6.0	,29	1.113	,30	0.009			
6.5	,31	1.381	,32	0.017			
7.0	,33	1.153	,34	0.031			
7.5	,35	1.016	,36	0.242			
8.0	,37	0.973	,38	0.025	,3	1.503	rind, 6- 12 cm
8.5	,39	1.237	,40	0.046			
9.0	,41	1.304	,42	0.017			
9.5	,43	1.074	,44	0.054			
10.0	,45	0.907	,46	0.007			
10.5	,47	1.305	,48	0.047			
11.0	,49	1.092	,50	0.006			
11.5	,51	1.115	,52	0.035			
12.0	,53	1.110	,54	0.028			
12.5	,55	0.910	,56	0.013			
13.0	,57	0.922	,58	0.025			
13.5	,59	0.909	,60	0.103			
14.0	,61	0.807	,62	0.127	,4	0.986	rind,12 - 17 cm
14.5	,63	0.970	,64	0.140			
15.0	,65	0.825	,66	0.046			
15.5	,67	0.815	,68	0.142			
16.0	,69	0.760	,70	0.127	,1	0.416	removed during
16.5	,71	0.529	,72	0.042			extrusion
17.0							

Lithologic symbols used in columnar section:
Basalt: Dark-matrix breccia: White rock fragment: Soil breccia: Agglutinate Fragmented glass

NASA-JSC